

The Positive and Negative Impacts of Transboundary Protected Areas on the Environment and the Social Makeup of a Region

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Abstract: A Transboundary Protected Area (TBPA) is an area of land and/or sea that crosses one or more borders, whose area is dedicated to the protection of biological diversity and resources, and managed cooperatively by government, local communities and non-governmental organizations. This type of protected area is a fairly new concept that has not had much research conducted on whether or not it achieves the goals it has set out to meet. This paper will focus on the positive and negative impacts of TBPA's on the environment and the social makeup of a region. TBPA's do a great job of increasing the number of species in an area, but is this done at the expense of communities livelihoods? Tourism is a great way to take advantage of a protected area and to build the economy, but proper management and education is necessary if the area is going to be successful.

Recently the state of our environment, as a whole, not simply in our backyard, is creeping onto the political stage. The Copenhagen conference this past December has brought the state of the earth's decaying ecosystems to every national leaders attention. We are realizing that conservation of natural resources as well as plants and animals is more important than ever. If we don't act quickly enough we will soon run into problems that will greatly affect our lives. We have already felt the effects of a shortage of oil and struggle to get enough water to villages that used to have a plentiful supply.

An increase in world poverty does not contribute to the idea of spending money on conservation. The fact that over half the world's population lives in extreme poverty, which is defined as living on less than \$1-\$2 per day makes it difficult for countries to justify spending money to set aside special places for wildlife (World Bank 2010). As a result, any kind of proposed protected area not only has to protect the environment, it will also have to provide some kind of economic benefit in order for countries to see them as a viable option (Goodale 2003). The creation of infrastructure along borders and a steady source of income, as well as cooperation between bordering countries can go a long way in alleviating poverty. A way to combine job creation, peace building and conservation into one program would be ideal, which is how the idea of creating a Transboundary Protected Area (TBPA) in these regions was formed.

While a TBPA does have the ability to create jobs, build peace and conserve resources, this can only occur with proper management, communication on both a local and global level and a small bit of luck. While one focus of a TBPA is to be a sanctuary for wildlife, without proper management it can quickly become a sanctuary for illegal activities such as poaching and drug smuggling. While building peace is a goal, talks

between countries can sometimes instead end up illuminating their past differences instead of remedying them, simply bringing to the forefront what they disagree on and putting them worse off than if a TBPA was never proposed (Duffy 2001).

This paper will focus on the positive and negative impacts of transboundary parks on both the environment and social makeup of the region within and bordering the protected area. It will be organized into three main sections. The first will be a section of literature notes reviewing the definitions and concepts of borders and transboundary protected areas. The second section will focus on the environmental impacts of a TBPA and if creating a protected area actually does accomplish the goal of protecting wildlife and includes two tables summarizing the positive and negative impacts. The final section will spotlight the social impacts that a TBPA has on the people and communities of the region and also includes two tables summarizing the positive and negative impacts. Many communities use the natural resources of the area to survive and their livelihood comes from agriculture which may not be possible if they are relocated to an area outside of the proposed protected area.

Literature Review

Political ecology stands as some of the framework for which TBPA's are built on. Those focusing on political ecology seek to understand the complex relationship between nature and society. This is done by looking at the forms of access and control over natural resources and their connection with environmental health and sustainable livelihoods. Political ecology takes a look at how the natural environment and the man-made environment affect one another, and respond to each other. This can take place

within a country, or over political boundaries which makes the relationship between the environment and society more complex (Watts 2002).

In general, borders are considered to be restrictive and in place usually as a means of security to restrict territorial access. Borders are usually classified into one of three types including military, economic or police borders. Military and police borders are generally intended to deter threats, illegal immigration, and access by anyone who could threaten national security. Economic borders are a bit different and are used to collect revenue and taxes related to interstate commerce and to protect domestic producers of goods.

Transboundary protected areas on the other hand create a completely different type of border which is in place for neither security nor economic prosperity, although these may be by-products, it is mainly created to be a conservation and peace-making border (Tanner 2007). A Transboundary Protected Area, or TBPA, as defined by the International Union for Conservation of Nature is, “an area of land and/or sea that straddles one or more borders between states, sub-national units such as provinces and regions, autonomous areas and/or areas beyond the limit of national sovereignty or jurisdiction, whose constituent parts are especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed cooperatively through legal or other effective means.”(Transboundary Conservation 2007)

Since political boundaries are not the same as ecological boundaries, often times many important ecosystems are fragmented between two or more countries and are subject to a variety of contradictory management and land use practices. TBPA’s “are

intended to restore connections between parts of an ecosystem through migration corridors for wildlife and common management policies for single ecosystems.” (Duffy 2007)

While physical borders are used to keep people out of a specific area, much of the time they in turn keep out wildlife. Certain elephant migration routes have been used for thousands of years, and by putting up a physical border to stop people from crossing the border, we have also prevented wildlife from traveling across the border. This can cause many problems including species being forced to find different breeding grounds, individual animals dying of starvation or dehydration, and even elephants destroying the crops and livelihood of the local people because they cannot find any other source of food. Instead of borders being a barrier to protect the inside from the outside, can they instead be used as “theaters of opportunity” for cooperation between countries and sustainability of ecosystems (Ramutsindela 2007)?

Environmental Impacts

Positive Impacts

The first goal of TBPA's are to effectively protect and maintain high levels of biodiversity and to provide conservation of resources for the area. Land conservation leads to greater numbers of species through good management and stewardship of the area. This is only possible if the local people as well as the local government understands the importance of the ecosystem and how they can benefit from keeping it healthy.

La Amistad peace park in Central America has used it's resources sustainably in order to create electricity for the local people. By using the river as a source for

hydroelectric power, it is in turn necessary for them to conserve the forests and make sure that the river is healthy so it can continue to provide power (Duffy 2001).

During the 1980's the Selous Game Reserve had a rapid increase in poaching for ivory and rhino horn which led to a great decline in rhino and elephant populations in the area. With keystone species facing demise it led to the compromise of the overall ecological integrity and survival of the reserve. With help from the German and Tanzanian Conservation Programs the Selous Game Reserve has been rehabilitated to a self-financing conservation area. There are also threats of bush-meat trade supplying the local markets however with a greater presence in the park and proper management this has also declined (Baldus, Hahn, Ellis and DeLeon 2007).

The Korean DMZ is an area that hasn't been named a TBPA as of yet, but has all of the points that would make a TBPA likely. The DMZ is a 2.4 mile wide military corridor that completely separates North and South Korea. It is guarded by military forces on both sides and does not allow any sort of human intrusion. While this may be considered a bit too strict for a TBPA border, we can use the DMZ as an example for what kind of wildlife sanctuary a 2.4 mile wide uninhabited zone can create. The DMZ has been protected for the last 50 years and in this short amount of time the area has seen a return of the Chinese egret and mountain goat along with a number of endangered and almost extinct species including the white-naped crane, the leopard cat and the Korean tiger. With protection of this area Korea has also gained educational and research opportunities for scientists studying the area (Kim 2007).

Community based natural resources management (CBNRM) is an idea that has greatly helped in the conservation of land in TBPA's. The concept of CBNRM has to do

with either “an approach where the real focus for joint natural resource management is the local community or to designate approaches where local communities play a central, but not exclusive role, in natural resource management.” A CBNRM is mostly about figuring out a way in which the state can share rights and responsibilities regarding natural resources with local communities. CBNRM’s are applicable at many different scales. They are useful at one end where communities participate in the protection of a park without actually being involved in any way in actual park management. At the other end is a complete change of ownership of land and natural resources from the state to the local communities. There are also joint management models where state representatives and communities work together to negotiate a contract and manage a state-owned natural resource (Treue and Nathan 2007). What is certain is that CBNRM’s will only be successful if communities have assistance, training and supervision (Metcalf 2003).

So far, the fact that TBPA’s are transboundary has not had much to do with how they conserve wildlife. However, when the concept of buffer zone’s are introduced, transboundary cooperation becomes much more important. A buffer zone is generally an area surrounding a protected area of land that is in place to keep the core protected area safe from external pressures (See figure 1). Wildlife can sometimes suffer from edge effects such as roadways or increased disease and parasitism near cities. As seen in figure 1 a buffer zone usually completely surrounds the protected area. When a TBPA has a buffer zone it is extremely important for cooperation between the countries. If only one country chooses to implement a buffer zone that can lead to problems. For example, in one country the buffer zone can be many miles wide while in the other there may not

be a buffer zone at all. This can mean that while one country has the core protected area almost completely off-limits from external factors, the other country may allow a large industrial park or factory right on the edge of the protected area. This would obviously lead to edge effects and actually make the core protected area smaller because wildlife is pushed further into the area, away from the edge where the factory is (Bentrup 2008).

Summary Table 1

Positive Environmental Impacts

Greater numbers of species overall
Use natural resources sustainably to create electricity
Decline in poaching and bush meat trade
Removal of species from endangered species list
Buffer zones create greater protection from external pressures

Negative Impacts

While TBPA's are intended to protect the environment and to conserve natural resources as discussed above, designating an area as "protected" can sometimes lead to just the opposite. The policy and management plan that is set in place needs to be thorough and detailed in order to prevent certain threats that could otherwise occur. Protected land will undoubtedly draw other development interests including agriculture. It can also serve as a safe-haven for drug and people traffickers as well as poachers.

Without proper management of the tourism industry within TBPA's, there can actually be many negative things that happen in these areas. The stocking of non-indigenous, rare species in order to draw greater crowds to the park is not healthy for the environment. In some cases non-indigenous species have no natural predators in a new environment. This leads to an overabundance of this species and they can take up so

much of the food supply and living space that other species populations greatly decline, even to extinction.

With an increase in tourism there can be an increase in the amount of natural resources used that is greater than the rate at which they can be renewed. Many countries are already facing a shortage of water and during a dry season resorts will need to keep an especially close watch on the amount of water that tourists consume.

Many of the other negative effects that occur are a result of a lack of tourist education. In order to prevent many of these impacts there needs to be a program in place that educates tourists on what is disturbing to the environment and natural landmarks. Tourists who are unaware of their surroundings can easily and accidentally hinder plant establishment, decrease survivorship of young, and decrease populations of fragile species who are easily affected by changes in their habitat.

Without proper management it is possible that there can be a desire to earn as much income as possible, no matter the impact on the environment. This may lead to selling more hunting permits than the area is able to handle. There needs to be clear calculations done to determine the population size of the hunted species and the regeneration rate of the species in order to determine how many permits can be issued without creating a permanent dent in the population of the species.

Events that are related to an increase in human traffic in the area also need to be considered. This includes the irrigation of wetlands to create resorts and the harmful impacts that waste disposal has on the environment. An increase in human traffic also means that the area needs to build infrastructure in order to support and increase in the number of people. This can mean building more roads, hotels, restaurants, etc. Without

proper care this can lead to environmental degradation in and around the TBPA.

(Spenceley, A. 2008.)

As discussed previously, the building of hydroelectric dams is a way to conserve natural resources and make sure that a river is kept healthy so that it can continue to supply electricity to the surrounding area. However, hydroelectric dams also cause extreme changes in the landscape of the area. Damming up a river creates a flood that destroys a lot of dry land habitat where animals may live and kills many plants that obviously cannot live underwater. The river which may have previously been used by spawning fish is now only hospitable by completely different breeds because it has been transformed into a lake. Also, many rivers cross political borders and are managed in different ways by different governments. If one country constructs a dam they are influencing the flow of the river downstream. If the border between two countries is downstream of a dam, the flow of water going into that country will be greatly affected. The river downstream of the dam which used to be quickly flowing may now be a slow, trickling stream affecting the wildlife that can live in it and the water supply for the villages that rely on the river (Duffy, R. 2001).

The private sector can have a large impact on the environment. When NGO's partner with communities many times the state gives large areas of land to the NGO's for management and "protection" because they need these NGO's to donate money in order to fund the park. (Spenceley 2008) These areas of land are often exploited by the NGO's and they become resource extraction programs right in the middle of a TBPA. Because the NGO is usually the stronger partner the communities are generally forced to relegate

any of the leadership roles they previously had and simply have the title of landowner, without any of the decision-making ability (Wolmer 2003).

Summary Table 2

Negative Environmental Effects

Stocking of non-indigenous species
Use of non-renewable resources that exceeds the rate at which replacement resources can be created
Renewable resources are used at a rate higher than their regeneration rates
The use of invasive plant species in tourist resort landscaping schemes
Irrigation (or filling in) of wetland areas to develop resorts on dry land
Damage to natural landmarks or heritage sites by tourists or developers
Reduction in plant species diversity and composition due to tourism disturbance
Disappearance of fragile species due to tourism disturbance
Negative impacts on plant germination, establishment and growth due to tourism disturbance
Decreased survivorship of young due to disturbance or destruction by tourism
Selling more hunting quotas than is appropriate for the population size and regeneration rate of wildlife
Poaching wildlife for trophies
Consumption that exceeds the recharge rate of reservoirs and aquifers from rainfall
Harmful impacts of waste disposal on the environment
Land exploitation by NGO's
Disturbance of downstream water supply due to the creation of dams

(Spenceley, A. 2008)

Social Impacts

Positive Impacts

Many of the positive social impacts of a TBPA stem from tourism and also the fact that a legal spotlight on an area can help local communities to win back land that was at one point wrongly taken away from them. Tourism almost always leads to an increase in jobs, infrastructure, and even funding for cultural programs that were not possible before.

Conejo Creek in the Sarstoon Temash area has been able to re-establish its deer dance as a result of funding from the Kekchi Council of Belize. The funding makes it possible for them to rent costumes from Mayan communities in Guatemala that still practice the dance. As a result of this they are able to pass along a tradition that may have been lost without the establishment of a TBPA (Duffy 2007).

As talks are established between cultural groups and more established communities, there can often be discussion about what group of people has the rights to what natural resources. There can be agreements made between groups that can help them to establish control of resources which were theirs in the past, but may have been taken unlawfully. The owners of the resources can then benefit from what is on their land and what is rightfully theirs. This can help to reestablish cultural identity and cultural landmarks which may have been absent from the community for years.

A large portion of creating a TBPA has to do with its ability to create jobs and further the economy in an area. A TBPA creates hundreds, possibly thousands, of jobs depending on how big the area is. It is beneficial for the management of the park to hire people from the local communities. They live in the area and therefore know the area extremely well. They are educated about the weather, the species in the area and also can educate tourists about the indigenous people and their cultural traditions, livelihoods, etc. In return the people of the village may be making more money than they were before when they were living on crops that they would grow and sell in the nearby city. It is important that those "who are most likely to suffer the costs associated with successful conservation also receive the greatest benefits"(Suich 2003).

TBPA's can also act as a physical representation of ongoing cooperation between both nations and cultural groups which may have had a past involving fighting or conflict. They will constantly be reminded of the cooperation they had to have in order to create the TBPA and make it successful, and will look back on the times when they were feuding and will see how far they have come. This can be a segway leading countries or communities to have deeper talks about possible cooperation and sharing of ideas surrounding economic, social and other environmental interests.

TBPA's can increase security and safety of an area by having more presence and attention drawn to the specific area. With a national spotlight on a newly created TBPA it makes it more difficult for rebel groups, drug traffickers, etc. to go under the radar. With a large amount of tourism in the area there needs to be security in place to make sure safety is a priority.

Many countries do not have much infrastructure in border areas because of past conflict and fighting that may have occurred in these areas. By creating opportunities for ecotourism and sustainable development across the whole region, both countries can begin post conflict reconstruction (Hammill and Besancon 2007).

Summary Table 3

Positive Social Impacts

Re-establishment of cultural traditions
Physical symbol of cooperation between cultures and governments
Possible segway leading to further talks on establishment of infrastructure, etc.
Determination of control over natural resources
Increase in security due to a greater presence of people in an area
Increase in infrastructure in border areas
Creation of jobs and a greater economy

Negative Impacts

While TBPA's have many positive aspects, they of course aren't a perfect solution to job creation and sustainable wildlife management. When countries who have had a conflict-ridden past are trying to cooperate on a transboundary protected area, it is often difficult to look past differences. Proposing a TBPA in some instances actually leads to further conflict between nations because countries realize just how different their viewpoints are from each other. Another thing to realize is that protected areas represent different things to different groups of people and organizations.

“For conservationists, they are an effective measure for protecting biodiversity; for private tourism companies, a basis for eco-tourism development; for pharmaceutical companies, a source of genetic information for drug development; for oil and mining companies, an unexplored supply of revenue; for the military, a refuge and strategic target during times of violent conflict; and for surrounding local communities, protected areas can signify restricted access to livelihood resources, forced relocation, or opportunities for income generation through tourism revenues.” (Hammill and Besancon 2007)

Obviously if this many groups are valuing a protected area in so many different ways, there is going to be conflict over land use, ownership and management of the land. With eco-tourism for example, one partner in the operation often tends to gain more than others. Belize and Mexico had quite a dispute over a reef that was a huge draw for tourists.

“Belizean government officials refused a plan from the Mexico government that the Belize barrier reef be renamed and marketed as the Maya reef or El Gran Arrecife Maya. The Belize barrier reef is part of a much larger reef system that stretches from Honduras in the south to Mexico in the north. While the reef is marketed as part of the Mundo Maya experience, the Belize government was concerned that Mexico had already degraded many of its reefs (especially around Cancun), and so the Mexican tourism industry would benefit disproportionately from claiming that the Maya reef was in Mexico. In effect the Mexican tourism industry would make financial gains from giving the impression that less environmentally damaged reefs of Belize were within Mexican borders.”

This example shows that the reliance on eco-tourism can be problematic when neighboring states can't cooperate even though it provides an important economic rationale for conservation programs.

Protected areas are often planned in areas that are environmentally unique and therefore make it possible for people to illegally harvest plants and animals that are hard to find elsewhere. These illegally gathered species are then sold and can make a lot of money in the international market. On the border of Guatemala and Belize people from the Sastun village very often cross the country boundary from Guatemala into Belize to collect orchids in the protected area which is on Belizean territory. Belize is one of the only places in the world where the black orchid can be found and it is highly prized by international collectors. The fact that this area is transboundary makes it very difficult

for law enforcement agencies because if the illegal traffickers are found they can simply cross over the border to avoid capture. The police usually find very little help from the local people because the illegal traffickers are often heavily armed and dangerous. Not only is the trafficking of illegal flora an obvious problem, the people of Belize are trying to protect this flower while the people of Guatemala are taking advantage of the protection and profiting off of it. While TBPA's are often in place to prevent conflict, examples like this lead to further struggle and violence between the two countries.

The international trade in narcotics is another problem faced by groups managing a TBPA. The drug trade is often the first issue when talks start about opening up a border between states or nations. Not only are drug trafficking rings dangerous, they often infiltrate all the way up to the government level. This makes it very difficult for TBPA's to be in these areas in the first place. Government officials are less likely to vote on the introduction of a protected area if it is a threat to their drug trafficking business which is making them a lot of money (Duffy 2007).

When protected areas are created in third world countries they can easily be the tipping point in an area that is already economically disadvantaged. Protected area policies can mean that surrounding communities have restricted access to natural resources or can even be forced to relocate from traditional lands. This can make their economic situation even worse and hurt their cultural identity. In some cases management and NGO's try to remedy this by allowing limited natural resource use or by financially compensating the community. Even with this they fail to realize that there will be crop damage from newly introduced wild animals, an unequal distribution of benefits and the communities are still excluded from any decision making process even

though the protected area was on land that they owned. Instead of TBPA's being a symbol of cooperation between countries, for these communities it often becomes a reminder of past imperial domination and colonization (Hammill and Besancon 2007).

Tourism can be an excellent source of income for local people, but it does bring up some problems. First, tourism is extremely seasonal. While there may be a plethora of jobs during one time of year, it may be extremely slow for months on end depending on the weather, economic crisis, etc. Second, the local people have to pay for the benefits of other people coming in from outside of the area. This is not necessarily always monetary payment either. There will be large developments going up in order to support an influx of tourists in the park, but also on the border of the park. Cities close by will need to have infrastructure that is capable of meeting tourist's needs during the peak season. Finally, there is also the problem of everyone in these communities working the same type of job and making a similar, very minimal paycheck. This causes a loss of economically mixed communities and a loss of diversity in employment which can be extremely detrimental if anything ever happens to the tourist industry. On top of this the local people are no longer making a living doing the things their fathers and grandfathers did. This can cause a great loss of cultural identity and education for the younger generations who won't learn how to subsist on selling crops, firewood, etc. and will only ever know about working through the tourism industry (Colhoun 2007).

While TBPA's can be a refuge for illegal traffickers, it can also be a strategic refuge for military conflict. Because TBPA's are usually created in areas of high biodiversity and rare habitat, they are great cover for military operations. Mountainous terrain as well as forests provide a great amount of cover which cannot necessarily be

found in other parts of the country where there is agriculture or other forms of development. TBPA's are usually created in remote locations that offer physical protection, and an abundance of natural resources including food, water, medicine and fuel for armies. The supply of wildlife also provides plenty of food to support military operations for an extended period of time without them having to leave. With the knowledge of this occurring many countries see protected areas as targets where they can purposely contaminate water supplies and either defoliate or burn forests in order to prevent the use of resources and to destroy shelter and cover for troops (Drame-Yaye, Boubacar and Biao 2007). When cases like this arise it brings up the question of whether designating an area as a TBPA actually helps it to be protected, or if it is worse off than if it wasn't protected at all because designation simply brings it to other military operations attention (Hammill and Besancon 2007).

Summary Table 4

Negative Social Impacts

Discussions lead to increased conflict because countries realize their differences
Differing opinions for what the protected area should be used for
Some partner in TBPA's benefit more than others
Illegal harvest and trade of rare plant and animal species
Opening up a border can cause an increase in the narcotics and people trafficking
Local communities are forced to relocate
Local communities have restricted access to natural resources
Crop damage from newly introduced wild animals
Loss of economic diversity due to tourism jobs
Tourism is seasonal, leaving lulls in the economy for periods of time
Possible target due to the strategic refuge it provides for the military

Conclusion

TBPA's focus on conserving the environment as well as play a role in forming a bond between countries through cooperative planning and decision-making. It may be necessary to take a closer look at TBPA's in order to determine if they are truly accomplishing what they have set out to do.

The large amount of negative affects that TBPA's have on the environment is alarming and can often be prevented with proper management, communication and common sense. It is not acceptable for non-indigenous species to be stocked in an area where they can take over and cause great disturbance in the ecosystem. Something like this can easily be prevented if the time is taken to do research and figure out what species are native to the area. A hunting lodge or tourist resort cannot be built in a TBPA without many precautions first being taken. Wetlands cannot be destroyed simply to allow for a new swimming pool to be built on the property. Tourists need to be taught what is acceptable in a protected area and it needs to be enforced.

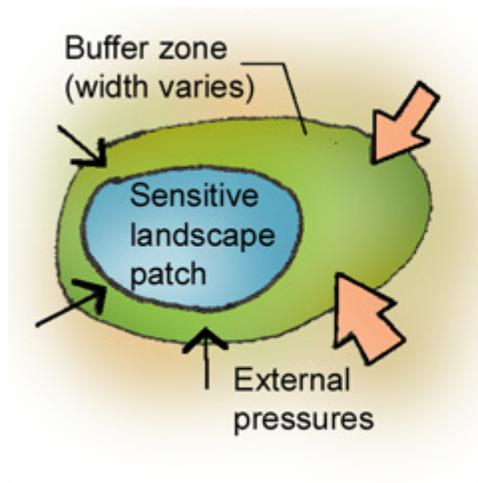
Negative social impacts are quite prevalent and are increased as a result of carelessness on the part of private organizations and management. There needs to be proper enforcement in the TBPA to prevent illegal trafficking of people, drugs and wildlife across the border. It is necessary for countries to come together to discuss their shared ecosystem and to figure out ways that they can equally benefit from it, instead of arguing and bringing up past feuds. Tourism cannot necessarily take over as the only form of work for the local people. They must continue to use agriculture and other sources of income not only to keep with their cultural tradition, but also to diversify their livelihoods.

Through my research I have determined that it is possible for a TBPA to be successful as long as there is proper management, communication and inclusion of local communities in the planning and execution of the park. I have also determined that it is much easier for cooperation between the government, private organizations and local people when funding for the park isn't an issue.

With this being said, something that I failed to discuss in depth in my paper is the fact that funding can be a source of many of the problems that TBPA's face. Many TBPA's are proposed in 3rd world countries which cannot justify spending money on conservation when so many of their people are struggling with poverty. A comparison between the struggles that TBPA's in 1st world countries and 3rd world countries face may be a good starting point to see how we can help 3rd world countries to cooperate in the formation of a park dedicated to conservation. This comparison will also help to determine if funding is one of the biggest issues or if parks need to be looked at on a park by park basis because each one struggles with something different.

Appendix

1.



Key Considerations

Base buffer width on specific ecological functions

Modify buffer width according to landscape context and external pressures

Manage activities within buffer to benefit goals in the landscape patch

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